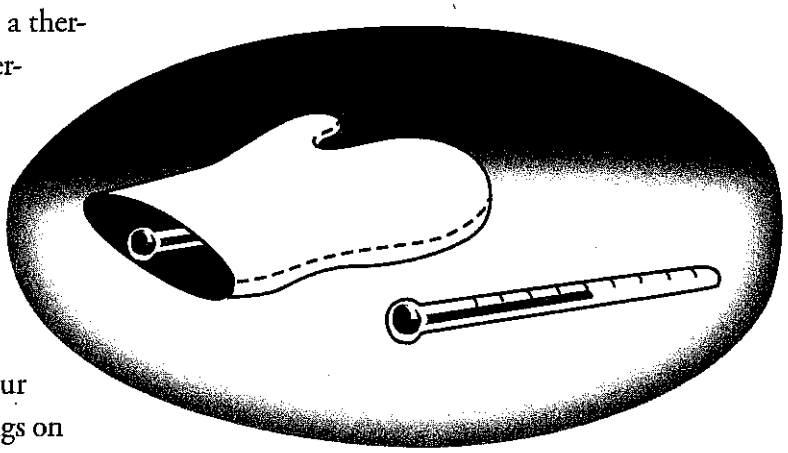
6.P.3

The Mitten Problem

Sarah's science class is investigating heat energy. They wonder what would happen to the temperature reading on a thermometer if they put the thermometer inside a mitten.



Sarah's group obtained two thermometers and a mitten. They put one thermometer inside the mitten and the other thermometer on the table next to the mitten. An hour later they compared the readings on the two thermometers. The temperature inside the room remained the same during their experiment.

What do you think Sarah's group will discover from their investigation? Circle the response that best matches your thinking.

A The thermometer inside the mitten will have a lower temperature reading than the thermometer on the table.

B The thermometer inside the mitten will have a higher temperature reading than the thermometer on the table.

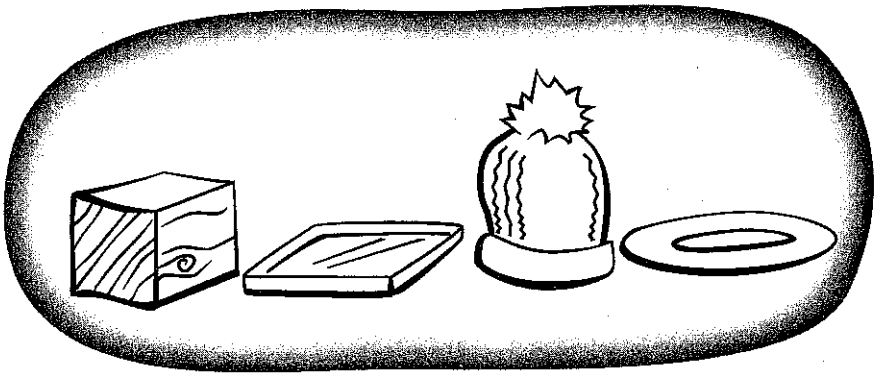
C Both thermometers will have the same temperature reading.

Describe your thinking. Provide an explanation for your answer.

Objects and Temperature

Taz and Kyle are comparing the temperature readings of four different objects:

- block of wood
- metal tray
- wool hat
- glass plate



They place the objects on a table in their science classroom and leave them overnight. A thermometer is attached to each object. The next day they record the temperature of each object at the same time.

Put an X next to the statement that best describes your prediction about the objects' temperature.

____ None of the objects will have the same temperature.

____ Two of the objects will have the same temperature.

____ Three of the objects will have the same temperature.

____ All of the objects will have the same temperature.

Describe your thinking. Provide an explanation for your answer.

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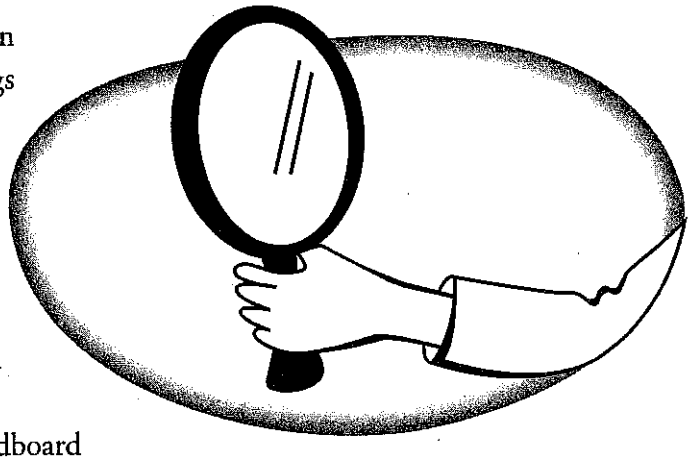
Can It Reflect Light?

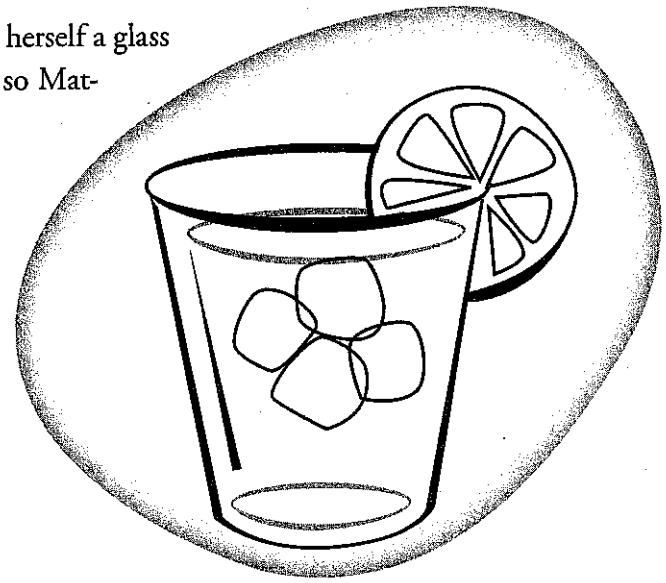
What types of objects or materials can reflect light? Put an X next to the things you think can reflect light.



___ water
___ gray rock
___ leaf
___ mirror
___ glass
___ sand
___ potato skin
___ wax paper
___ tomato soup
___ crumpled paper
___ shiny metal
___ dull metal
___ red apple
___ rough cardboard
___ the Moon
___ rusty nail
___ clouds
___ soil
___ wood
___ milk
___ bedsheet
___ brand new penny
___ old tarnished penny
___ smooth sheet of aluminum foil

Explain your thinking. Describe the "rule" or the reasoning you used to decide if something can reflect light.

Ice-Cold Lemonade



It was a hot summer day. Mattie poured herself a glass of lemonade. The lemonade was warm, so Mattie put some ice in the glass. After 10 minutes, Mattie noticed that the ice was melting and the lemonade was cold. Mattie wondered what made the lemonade get cold. She had three different ideas. Which idea do you think best explains why the lemonade got cold? Circle your answer.

A The coldness from the ice moved into the lemonade.

B The heat from the lemonade moved into the ice.

C The coldness and the heat moved back and forth until the lemonade cooled off.

Explain your thinking. Describe the "rule" or reasoning you used for your answer.

Mixing Water

Melinda filled two glasses of equal size half-full with water. The water in one glass was 50 degrees Celsius. The water in the other glass was 10 degrees Celsius. She poured one glass into the other, stirred the liquid, and measured the temperature of the full glass of water.

What do you think the temperature of the full glass of water will be after the water is mixed? Circle your prediction.

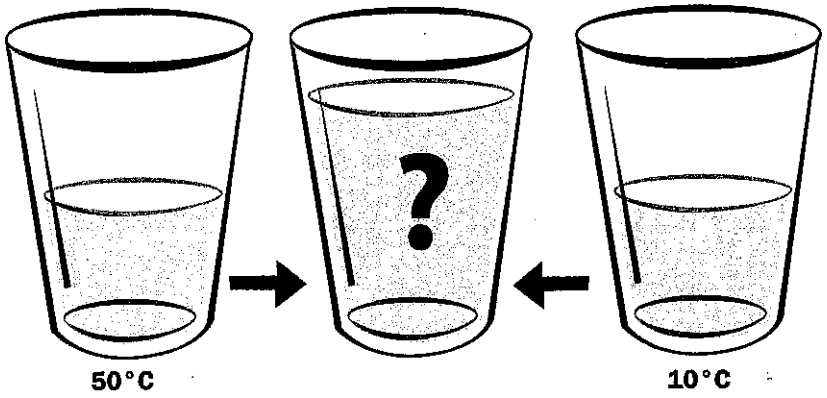
A 20 degrees Celsius

B 30 degrees Celsius

C 40 degrees Celsius

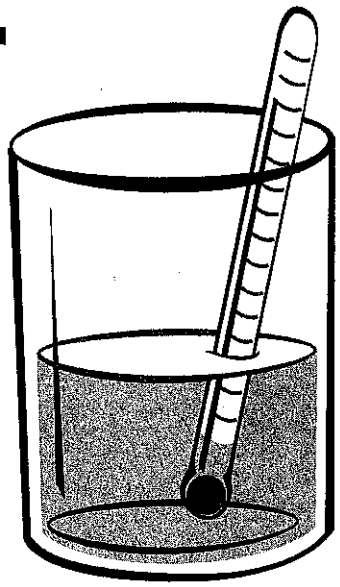
D 50 degrees Celsius

E 60 degrees Celsius



Explain your thinking. Describe the "rule" or reasoning you used for your answer.

Thermometer



Mr. Martinez placed a thermometer in a jar of very hot water. His students watched what happened to the thermometer. Immediately the level of the red liquid in the thermometer went up. His students disagreed about why the red liquid in the thermometer rose when the thermometer was placed in hot water. This is what they said:

Jean-Paul:	"The hot water pushed it up."
Pita:	"The mass of the red liquid increased."
Jonathan:	"The heat inside the thermometer rises."
Jimena:	"The air inside the thermometer pulls it up."
Molly:	"The molecules of the red liquid are further apart."
Greta:	"The number of molecules in the red liquid increased."
Keanu:	"The molecules of the red liquid are getting bigger."

Which student do you most agree with? _____

Explain why you think that student has the best explanation.

_____

_____

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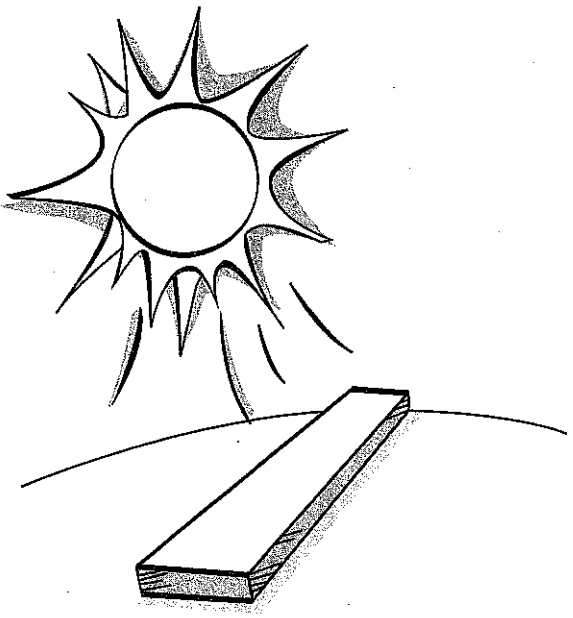
Iron Bar



Nate measured an iron bar. He put the iron bar in the hot sun. When he measured the bar after it had been in the sun, it was slightly longer. Which sentence best describes what happened to the iron atoms after the bar was left in the hot sun?

A The number of atoms increased.

B The size of the atoms increased.

C The space between each atom increased.

D The air in the spaces between the iron atoms expanded.

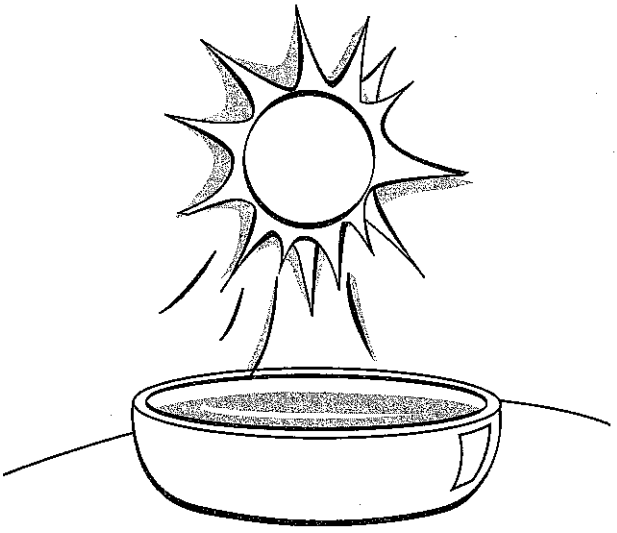
E Some of the atoms began to melt and spread out further in the bar.

F The heat caused the atoms to flow around the bar and pushed it outward.

Explain your thinking about what happens to atoms when a metal is heated. You may draw pictures to support your explanation.

Warming Water

Two friends put a bowl of very cold water outside on a hot sunny day. The Sun warmed the water. They wondered about the energy of the water. This is what they thought:



Ted: "The very cold water had energy. The Sun provided additional energy to warm the water."

Ambra: "The very cold water did not have energy. The energy in the warm water came from the Sun."

Which friend has the best idea? Explain why you agree with one friend and not the other.